



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER OF PATENTS AND TRADEMARKS  
Washington, D.C. 20231  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/998,936	11/30/2001	Chad A. Mirkin	00-1124-A	5912

7590 02/20/2003

McDonnell Boehnen Hulbert & Berghoff  
32nd Floor  
300 S. Wacker Drive  
Chicago, IL 60606

EXAMINER
----------

ALANKO, ANITA KAREN

ART UNIT	PAPER NUMBER
----------	--------------

1765

8

DATE MAILED: 02/20/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/998,936

Applicant(s)

MIRKIN ET AL.

Examiner

Anita K Alanko

Art Unit

1765

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-13 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-13 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.  
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).  
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 3,7 6) ☐ Other:

*Specification*

The disclosure is objected to because of the following informalities: there should be a section including a brief description of the drawings.

Appropriate correction is required.

*Claim Rejections - 35 USC § 103*

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

*Claim 1 is rejected under 35 U.S.C. 103(a) as being unpatentable over Dapkus et al (US 6,347,159) in view of admitted prior art.*

Dapkus discloses a method comprising recycling substrate by removing metallic coatings (such as silver, col.3, line 25) comprising:

providing an etching solution 76;

contacting the substrate 22a with the etching solution for a time sufficient to remove the coating (col.7, lines 19-22); and

washing 94 the etching solution away from the substrate (col.8, lines 7-8).

Dapkus does not disclose that the silver to be removed is from a silver stained DNA detection chip having bound gold nanoparticles. Admitted prior art teaches that silver stained DNA detection chips having bound gold nanoparticles are known (pages 1-2 of specification). It would have been obvious to one with ordinary skill in the art that it would be useful to remove

silver in order to regenerate the surface of the chip in order to save money by recycling the chips. It would have been further obvious to use the method of Dapkus to regenerate such silver stained DNA detection chip having bound gold nanoparticles because such chips are useful as taught in the admitted prior art.

***Claims 1-7, 9-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dapkus et al (US 6,347,159) in view of admitted prior art and Xia et al (1995).***

The discussion of modified Dapkus from above is repeated here.

As to claim 2, Dapkus does not disclose an etchant useful for silver. Xia teaches a useful etchant for silver comprising cyanide (p.2332, "Experimental Section"). It would have been obvious to one with ordinary skill in the art to use a cyanide etching solution in the modified method of Dapkus because Xia teaches that it is useful for etching silver.

As to claims 3-6, Xia teaches that the cyanide etching solution contains KOH,  $K_3Fe(CN)_6$  and  $K_4Fe(CN)_6$ . Xia also teaches that  $K_2S_2O_3$  is useful in the etchant. It would have been obvious to one with ordinary skill in the art to use  $Na_2S_2O_3$  in the method of Xia because Na and K are both alkali metals. The concentration of the etchant determines how effective the etching is because it determines the amount of etching species available for etching. It would have been still further obvious to use the etchants in the concentrations cited because the concentrations appear to reflect a result-effective variable which can be optimized. See MPEP 2144.05 IIB.

As to claim 7, Dapkus discloses to dip the substrate into the etching solution.

As to claim 9, Dapkus discloses to wash with water (col.8, lines 7-8). It would have been obvious to one with ordinary skill in the art to wash with water in the modified method of Dapkus because water washing is conventional for removing etchant as taught by Dapkus.

As to claim 10, the time for applying an etchant also determines how efficient the etching is because it determines the amount of time that the active etching species is available for etching. It would have been still further obvious to use the etchants for the time cited because the time appears to reflect a result-effective variable which can be optimized. See MPEP 2144.05 IIB.

As to claim 11, Dapkus discloses to apply ultrasound 100.

As to claim 12, apparatus limitations are given little weight in process claims.

As to claim 13, the time for applying the ultrasound also determines how efficient the etching is because it determines the amount of active etching species that is available for etching. It would have been still further obvious to use the ultrasound for the time cited because the time appears to reflect a result-effective variable which can be optimized. See MPEP 2144.05 IIB.

***Claims 1-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dapkus et al (US 6,347,159) in view of admitted prior art, Xia et al (1995) and Akahoshi et al (US 5,294,291).***

The discussions of modified Dapkus from above are repeated here.

As to claim 8, Dapkus does not disclose to spray the etching solution. Akahoshi teaches that it is useful to spray an etchant as a means for applying etchant to a substrate (col.3, lines 8-10). Therefore, it would have been obvious to one with ordinary skill in the art to spray the

Paper No. 8

Art Unit: 1765

---

etching solution in the modified method of Dapkus because Akahoshi teaches that this is a useful technique for applying an etching solution.

*Conclusion*

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Anita K Alanko whose telephone number is 703-305-7708. The examiner can normally be reached on Monday-Friday, 10:00 am-4:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Benjamin L Utech can be reached on 703-308-3836. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9057 for regular communications and 703-872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0661.

*Anita K. Alanko*

Anita K Alanko  
Primary Examiner  
Art Unit 1765

AKA  
February 10, 2003